REMARKS

Claims 1-66 are all the claims pending in the application.

The Examiner indicates that claims 7, 10, 19, 21-25, 29-33, 35, 37-41, 43, 44, 47-51-53, 57, and 61-63 describe allowable subject matters. Accordingly, Applicant rewrites claims 7, 9, 21-22, 27, 29-30 and 37-38 in independent from to place many of the claims in condition for allowance.

Claims 1, 3, 4, 6, 45, 46, 54, 55, 56, 64-66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admission of the prior art in view of Tischler et al. The present invention relates to a fluorescence observing apparatus that employs an InGaN based or a GaN based semiconductor laser as the excitation light source. Through the use of these types of lasers, an inexpensive and high output excitation light source can be obtained. The apparatus measures fluorescence emitted from a sample by irradiation of the excitation light and then uses this measurement to provide information for diagnosis. The Examiner cites Tischler for disclosing the use of a GaN based laser that can have application as an excitation source for spectroscopic analysis.

Tischler merely discusses the use of GaN articles as a substrate for the formation of microelectronic structures including components for devices such as LEDs, lasers, or excitation sources for spectroscopic analysis applications (see col. 7, ln. 38-45, Tischler). However, this reference never mentions actually using a GaN article as a light source for irradiating during specific periods of non irradiation or blanking as discussed in claims 45, 46, and 54. Specifically, claims 45 and 46 teaches a fluorescence observing apparatus further comprising

65. (Original): The fluorescence observing apparatus as set forth in claim 54, wherein said pulsed excitation light is formed from a plurality of pulses.

66. (Original): The fluorescence observing apparatus as set forth in any of claims 1-65, incorporated into an endoscope, an operation microscope or a colposcope.

visible light irradiation means for intermittently irradiating visible light to a sample and normal image forming means for forming a normal image of said sample illuminated with said visible light, wherein said pulsed excitation light is irradiated during a non irradiation period of said visible light. Claim 54 teaches the fluorescence observing apparatus wherein the irradiation of the excitation light is performed during the time that said normal image forming means is in a vertical blanking period. Therefore, the rejection of claims 45, 46, and 54 under 35 U.S.C. § 103(a) should be withdrawn.

Claims 8-9,11,48,49,58,59,66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admission of the prior art in view of Tischler et al as applied to claims 3,4 above, and further in view of Studholme et al.

As previously submitted the Examiner contends that it would be obvious to substitute the driving mechanisms in Studholme in Tischler, citing interchangeability of operation. However, Studholme suggest that there are temperature, timing, and power constraints for the driving laser sources. Depending on the criticality of a particular laser output characteristic, the modes of driving are not interchangeable as the Examiner contends. Studholme teaches a fluorescence detection system to be used in conjunction with fluorescable dyes in order to improve the signal detection (see Studholme, col. 12, ln.25-50). Studholme advocates selecting a dye with a long excitation wavelength in the red and infrared wavelengths to achieve a higher sensitivity (*see* col.2, ln.28-43, Studholme). Typical wavelengths include 670 nm, 685 nm, 720 nm, 750 nm, and 780 nm (*see* col.5, ln. 44-46, Studholme). To the extent that short wavelengths are used,

they provide a reduced sensitivity (on the order of 1 magnitude of difference) to fluorescence, thus suggesting that long wavelengths should be used with the contemplated dyes.

According to Studholme, the laser diode used as the excitation light source produces poor sensitivity when used to emit light which has a wavelength belonging to a short wavelength region from ultraviolet rays to visible light. Studholme is unable to achieve adequate sensitivity without using laser diodes available in discrete output wavelengths compatible with fluorescent dyes at the red or longer wavelength (*see* col.5, ln.40-50, Studholme).

The Examiner correctly concedes Studholme fails to refer to the use of a GaN based semiconductor laser. However, the Examiner's citation of Tischler does not support the rejection.

An important factor in selecting an appropriate laser source is the excitation and emission wavelengths characteristic of the dye being used. There are certain types of LEDs that are not likely to excite specific fluorescent dyes. Applicant submid that the GaN based semiconductor is not compatible with the fluorescent dyes taught in Studholme. For instance, Tischler only describes emissions in the blue range, which is quite outside the range contemplated to excite the fluorophores of Studholme.

A GaN laser emitting short wavelengths in combination with dyes excitable by red and infrared wavelengths of Studholme would lead to undermining the principle operation of the primary reference.

In this connection, the Examiner's rationale to combine the references is also improper. The rationale assumes use of blue wavelengths and is contemplated by both references.

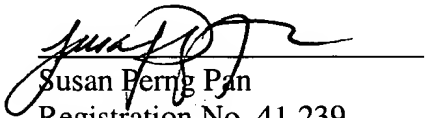
However, Studholme favors longer wavelengths to improve sensitivity. Therefore, the Examiner's rationale is not supported. Further, it would not have been obvious to one of ordinary skill in the art to combine Studholme and Tischler. These arguments were previously submitted and the rejections were then withdrawn so they should be withdrawn again.

Claim 1 has been amended to describe the excitation wavelength more particularly.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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